This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-30. (Canceled)

31. (Original) A pressure regulator for controlling fluid in a pipeline, the pressure regulator being operated by a battery, comprising:

a battery sensor adapted to sense an operation parameter of the battery, and responsively generate an operation parameter signal;

a memory adapted to store a threshold capacity value of the battery, and responsively generate a threshold capacity signal; and

a controller unit for controlling power consumption of the pressure regulator, wherein the controller unit is adapted to receive the operation parameter signal and the threshold capacity signal, and responsively generate a command signal to operate the pressure regulator in at least one of a plurality of operating modes.

32. (Original) The pressure regulator of claim 31, wherein the controller unit includes a processor having a computation unit and a logic unit, wherein the computation unit is adapted to generate a remaining capacity signal indicative of the remaining capacity of the battery in response to the operation parameter signal, and wherein the logic unit is adapted to compare the remaining capacity signal and the threshold capacity signal, and responsively generate the command signal to operate the pressure regulator in the at least one of the plurality of operating modes in accordance with a logic routine.

33. (Original) The pressure regulator of claim 32, wherein the plurality of operating modes includes a power conservation mode and a failsafe mode, wherein the logic routine operates the pressure regulator in the power conservation mode when the remaining capacity signal is less than the threshold capacity signal, and wherein the logic routine operates the pressure regulator in the failsafe mode when the remaining capacity signal is equal to zero.

34. (Original) The pressure regulator of claim 33, further including a back-up battery coupled to the pressure regulator, wherein the logic routine is adapted to activate the back-up battery in the failsafe mode.

35. (Original) The pressure regulator of claim 33, wherein the logic routine is adapted to deactivate the battery sensor in the failsafe mode.

36. (Original) The pressure regulator of claim 33, wherein the logic routine is adapted to shutdown the processor in the failsafe mode.

37. (Original) The pressure regulator of claim 33, wherein the threshold capacity value includes a first threshold value and a second threshold value, and wherein the power conservation mode includes a first power conservation mode and a second power conservation mode, wherein the memory is adapted to generate a first threshold signal in response to the first threshold value,

wherein the memory is adapted to generate a second threshold signal in response to the second threshold value, wherein the logic routine is adapted to operate the pressure regulator in the first power conservation mode when the remaining capacity signal is less than the first threshold signal, and wherein the logic routine is adapted to operate the pressure regulator in the second power conservation mode when the remaining capacity signal is less than the second threshold signal.

38. (Original) The pressure regulator of claim 37, wherein the logic routine is adapted to generate an alarm in at least one of the first power conservation mode and the second power conservation mode.

39. (Original) The pressure regulator of claim 38, wherein the alarm includes a first alarm and a second alarm, wherein the logic routine is adapted to generate the first alarm in the first power conservation mode, and wherein the logic routine is adapted to generate the second alarm in the second power conservation mode.

40. (Original) The pressure regulator of claim 37, wherein the processor includes a clock adapted to provide a clock signal at a frequency, wherein the controller unit is adapted to receive the operation parameter signal at a sample rate corresponding to the frequency of the clock signal, and wherein the logic routine is adapted to reduce the frequency of the clock signal in one of the first power conservation mode and the second power conservation mode.

41. (Original) The pressure regulator of claim 40, wherein the logic routine is adapted to reduce the sample rate in at least one of the first power conservation mode and the second power conservation mode.

42. (Original) A controller unit adapted to control power consumption of a pressure regulator, the pressure regulator being operated by a battery, the controller unit comprising:

a battery sensor adapted to sense an operation parameter of the battery, and responsively generate an operation parameter signal;

a memory adapted to store a threshold capacity value of the battery, and responsively generate a threshold capacity signal; and

a processor adapted to receive the operation parameter signal and the threshold capacity signal, and responsively generate a command signal to operate the pressure regulator in at least one of a plurality of operating modes.

43. (Original) The controller unit of claim 42, wherein the processor includes a computation unit, a logic unit, and a clock, wherein the clock is adapted to provide a clock signal at a frequency, wherein the computation unit is adapted to receive the operation parameter signal from the battery sensor at a sample rate corresponding to the frequency of the clock signal, and responsively generate a remaining capacity signal indicative of the remaining capacity of the battery, and wherein the logic unit is adapted to compare the remaining capacity signal and the threshold capacity signal and operate the pressure regulator in the at least one of the plurality of operating modes in accordance with a logic routine.

44. (Original) The controller unit of claim 43, wherein the plurality of operating modes includes a power conservation mode and a failsafe mode, wherein the logic routine is adapted to operate the pressure regulator in the power conservation mode when the remaining capacity signal is less than the threshold capacity signal, and wherein the logic routine is adapted to operate the pressure regulator in the failsafe mode when the remaining capacity signal is equal to zero.

45. (Original) The controller unit of claim 44, wherein the threshold capacity value includes a first threshold value and a second threshold value stored in the memory, and wherein the power conservation mode includes a first power conservation mode and a second power conservation mode, wherein the memory is adapted to generate a first threshold signal in response to the first threshold value, wherein the memory is adapted to generate a second threshold signal in response to the second threshold value, wherein the logic routine is adapted to operate the pressure regulator in the first power conservation mode when the remaining capacity signal is less than the first threshold signal, and wherein the logic routine is adapted to operate the pressure regulator in the second power conservation mode when the remaining capacity signal is less than the second threshold signal.

46. (Original) A method for controlling power consumption of a pressure regulator, the pressure regulator being operated by a battery, the method comprising the steps of:

providing a battery sensor for sensing an operation parameter of the battery;

storing a threshold capacity value of the battery;

operating the pressure regulator in at least one of a plurality of operating modes in accordance with a logic routine based on the operation parameter and the threshold capacity value.

47. (Original) The method of claim 46, including the steps of:

determining a remaining capacity value of the battery based on the operation parameter;

comparing the remaining capacity value and the threshold capacity value; and

operating the pressure regulator in the at least one of the plurality of operating modes based on the comparison of the remaining capacity value and the threshold capacity value.

48. (Original) The method of claim 47, wherein the step of operating the pressure regulator includes the steps of:

operating the pressure regulator in a power conservation mode when the remaining capacity value is less than the threshold capacity value; and

operating the pressure regulator in a failsafe mode when the remaining capacity value is equal to zero.